

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A synchronous signal generating method in which a plurality of coding tables is used to subject ~~[[an]]~~ input data ~~word~~ words of p-bits to modulation and to thereby obtain ~~[[a]]~~ ~~word~~ words of q-bits ($q > p$), said plurality of coding tables storing the code words corresponding to ~~[[the]]~~ respective input data words, and to state information indicating the coding table for use in modulating a next input data word to obtain a next code word satisfying a predetermined run length restriction rule even with the next code word coupled directly with the code word, ~~and a synchronous signal for decoding reproducing data is inserted into every predetermined number of code words in a string of the code words satisfying said predetermined run length restriction rule, so as to generate a synchronous frame;~~ the method comprising:

~~wherein generating a said synchronous signal for decoding reproducing data, that~~ is separable from ~~said~~ a string of code words satisfying said predetermined run length restriction rule, and comprises a specific code for identifying ~~[[the]]~~ a position in one sector and a synchronous pattern comprising a first bit pattern of a run length longer than a maximum run length in said predetermined run length restriction rule by 1T or more (T is a period of channel bit of the ~~word~~ string of code words) and a following second bit pattern of a run length longer than a minimum run length, and said synchronous pattern ~~includes~~ including part of a following code word; and

inserting said synchronous signal into every predetermined number of code words in said string of code words satisfying said predetermined run length restriction rule to generate a synchronous frame.

2. (Currently Amended) A synchronous signal generating method according to claim 1, wherein a specific coding table and another specific coding table of said plurality of coding tables are allotted to have an even/odd relation such that the number of "1"s in each of the code words stored corresponding to the respective predetermined input data words is even in the specific coding table and the number of "1" in the code word is odd in the other specific coding table so as to enable a DSV control, and when said predetermined input data word is modulated, the code word having a smaller absolute value is selected from an absolute value of a DSV value obtained from the code word using said specific coding table, and an absolute value of a DSV value obtained from the code word modulated using said other specific coding table, ~~and the DSV control is performed,~~ and a synchronous signal for decoding reproducing data is inserted into every predetermined number of code words in a string of the code words satisfying said predetermined run length restriction rule while the DSV control is performed, so as to generate the synchronous frame.

3. (Original) A synchronous signal generating method according to claim 1, wherein a plurality of synchronous signal tables is prepared corresponding to said plurality of coding tables, and a plurality of synchronous signal bit patterns for generating said synchronous signal is set in each of said synchronous signal tables, each of said synchronous signal bit pattern having

two bit patterns in even/odd relation such that the number of "1" is even in one pattern and is odd in the other pattern to allow selection therebetween by a DSV control.

4. (Original) A synchronous signal generating method according to claim 1, wherein said p bit is 8 bit, said q bit is 15 bit, and said run length restriction rule sets a minimum run length of a signal of the code words subjected to NRZI conversion at 3T without said synchronous signal and a maximum run length at one of 11T, 12T, 13T and 14T.

5. (Currently Amended) A recording apparatus comprising:
a modulating unit for modulating ~~in which a plurality of coding tables is used to subject~~
[[an]] input data ~~word~~ words of p-bits ~~to modulation and to thereby obtain~~ [[a]] code ~~word~~ words
of q-bits ($q > p$), ~~said by referring to~~ a plurality of coding tables storing the code words
corresponding to [[the]] respective input data words, and to state information indicating the
coding table for use in modulating a next input data word to obtain a next code word satisfying a
predetermined run length restriction rule even with the next code word coupled directly with the
code word; ~~and a synchronous signal for decoding reproducing data is inserted into every~~
~~predetermined number of code words in a string of the code words satisfying said predetermined~~
~~run length restriction rule, so as to generate a synchronous frame and sequentially record~~
~~synchronous frames in a recording medium;~~

~~wherein said~~ a synchronous signal generation unit for generating a synchronous signal for
decoding reproducing data, that is separable from ~~said~~ a string of code words satisfying said
predetermined run length restriction rule, and comprises a specific code for identifying [[the]] a

position in one sector and a synchronous pattern comprising a first bit pattern of a run length longer than a maximum run length in said predetermined run length restriction rule by 1 T or more (T is a period of channel bit of the ~~cord~~ string of code words) and a following second bit pattern of a run length longer than a minimum run length, ~~[[and]]~~ said synchronous pattern ~~includes~~ including part of a following code word;

a synchronous frame generation unit for inserting said synchronous signal into every predetermined number of code words in said string of code words satisfying said predetermined run length restriction rule to generate a synchronous frame; and

a recording unit for sequentially recording a recording signal based on said synchronous frame in a recording medium.

6. (Currently Amended) A recording apparatus according to claim 5,

wherein a specific coding table and another specific coding table of said plurality of coding tables are allotted to have an even/odd relation such that the number of "1"s in each of the code words stored corresponding to ~~[[the]]~~ respective predetermined input data words is even in ~~[[the]]~~ a specific coding table and the number of "1"s in the code word is odd in ~~[[the]]~~ other another specific coding table so as to enable a DSV control, and ~~when said predetermined input data word is modulated,~~ said modulating unit selects the code word having a smaller absolute value ~~is selected~~ from an absolute value of a DSV value obtained from the code word using said specific coding table, and an absolute value of a DSV value obtained from the code word modulated using said ~~other~~ another specific coding table, ~~and the DSV control is performed,~~ and said synchronous frame generation unit inserts said ~~[[a]]~~ synchronous signal for decoding

reproducing data ~~is inserted~~ into every predetermined number of code words in a string of the code words satisfying said predetermined run length restriction rule while the DSV control is performed, ~~so as to generate the synchronous frame.~~

7. (Currently Amended) A transmitting apparatus comprising:

a modulating unit for modulating ~~in which a plurality of coding tables is used to subject~~
an input data word of p-bits ~~to modulation and to thereby obtain a code word of q-bits ($q > p$), said~~
~~by referring to a~~ plurality of coding tables storing the code words corresponding to [[the]]
respective input data words, and to state information indicating the coding table for use in
modulating a next input data word to obtain a next code word satisfying a predetermined run
length restriction rule even with the next code word coupled directly with the code word; ~~and a~~
~~synchronous signal for decoding reproducing data is inserted into every predetermined number~~
~~of code words in a string of the code words satisfying said predetermined run length restriction~~
~~rule, so as to generate a synchronous frame and sequentially transmit synchronous frames by~~
~~wire or radio,~~

~~wherein said~~ a synchronous signal generation unit for generating a synchronous signal for
decoding reproducing data, that is separable from said a string of code words satisfying said
predetermined run length restriction rule, and comprises a specific code for identifying [[the]] a
position in one sector and a synchronous pattern comprising a first bit pattern of a run length
longer than a maximum run length in said predetermined run length restriction rule by 1 T or
more (T is a period of channel bit of the ~~code~~ string of code words) and a following second bit

pattern of a run length longer than a minimum run length, and said synchronous pattern ~~includes~~
including part of a following code word;

a synchronous frame generation unit for inserting said synchronous signal into every
predetermined number of code words in said string of code words satisfying said predetermined
run length restriction rule to generate a synchronous frame; and

a transmitting unit for sequentially transmitting a recording signal based on said
synchronous frame by wire or radio.

8. (Currently Amended) A transmitting apparatus according to claim 7,

wherein a specific coding table and another specific coding table of said plurality of
coding tables are allotted to have an even/odd relation such that the number of "1"s in each of the
code words stored corresponding to ~~[[the]]~~ a respective predetermined input data words is even
in the specific coding table and the number of "1"s in the code word is odd in ~~[[the]]~~ other
another specific coding table so as to enable a DSV control, and ~~when said predetermined input
data word is modulated,~~ said modulating unit selects the code word having a smaller absolute
value ~~is selected~~ from an absolute value of a DSV value obtained from the code word using said
specific coding table, and an absolute value of a DSV value obtained from the code word
modulated using said ~~other~~ another specific coding table, ~~and the DSV control is performed,~~ and
said synchronous frame generation unit inserts said ~~[[a]]~~ synchronous signal for decoding
reproducing data ~~is inserted~~ into every predetermined number of code words in a string of the
code words satisfying said predetermined run length restriction rule while the DSV control is
performed, ~~so as to generate the synchronous frame.~~

9. (Original) A recording medium which is recorded using the synchronous signal generating method according to claim 1.

10. (Original) A transmission medium which is transmitted using the synchronous signal generating method according to claim 1.